

What is claimed is:

1. A removal device for revision of an internally threaded cannulated bone screw, comprising:

 a wire body having threads at a distal end thereof for engagement with said corresponding threads of said screw; and

 a handle at a proximal end of the wire body for use in pulling the removal device after engagement with the cannulated screw.

2. A removal device in accordance with claim 1, wherein:

 said removal device is adapted for insertion into a cannulated instrument.

3. A removal device in accordance with claim 1, wherein:

 said removal device is adapted for insertion into a cannulated screwdriver.

4. A removal device in accordance with claim 1, wherein the threads of the wire body are external threads and the corresponding threads of said screw are internal threads.

5. A method for revision of an implanted cannulated bone screw, comprising the steps of:

inserting a cannulated screwdriver into a screw head of said cannulated bone screw;

introducing a removal device into said cannulated screwdriver;

screwing a threaded distal end of said removal device into a corresponding threaded portion of said cannulated screw; and

simultaneously unscrewing said screw using said cannulated screwdriver and pulling said screw using a handle located on a proximal end of said removal device.

6. A method in accordance with claim 5, wherein the distal end of said removal device is externally threaded and the corresponding threaded portion of said screw is an internally threaded portion.

7. A method in accordance with claim 5, wherein:

said bone screw secures a clamping element to a bone segment; and

a locking mechanism secures said bone screw to said clamping element.

8. A method in accordance with claim 7, wherein said locking mechanism comprises:

at least two snap catches protruding from a bone-contacting surface of said clamping element and spaced around an edge of a screw hole; and

a circumferential groove located on a top portion of said screw below a screw head for receipt of said snap catches;

wherein said snap catches interlock with said groove to secure said bone screw to said clamping element when said bone screw is screwed into said bone segment through said screw hole of said clamping element.

9. A method in accordance with claim 8, wherein:

said snap catches comprise spikes adapted to function as bone anchors.

10. A method in accordance with claim 9, wherein:

said spikes comprise elastic spring elements; and
said elastic spring elements snap into said groove when said bone screw is inserted into said clamping element.

11. A method in accordance with claim 8, wherein a greater axial force is needed to remove said screw from said clamping element than is needed to insert said screw into said clamping element.

12. A method in accordance with claim 8, wherein:

removal of said screw from said clamping element results in deformation of at least one of (i) said snap catches, or (ii) said groove.

13. A method in accordance with claim 8, wherein:

said screw comprises a shaft having a conical portion between said groove and threads of said shaft.

14. A method in accordance with claim 8, wherein:

said groove has a flat edge portion perpendicular to a shaft of said screw; and

said snap catches have a square end portion for interlocking with said flat edge portion.

15. A method in accordance with claim 14, wherein:

removal of said screw from said clamping element results in deformation of at least one of (i) said square end portion of said snap catches, or (ii) said flat edge portion of said groove.

16. A method in accordance with claim 8, wherein:

said screw is rotatable after interlocking with said clamping element in order to achieve further pre-stress between said bone segment and said clamping element.

17. A method for locking a bone screw to a clamping element, comprising the steps of:

providing a clamping element for stabilizing bone segments, having at least two snap catches protruding from

a bone-contacting surface of said clamping element and spaced around an edge of a screw hole;

providing a bone screw having a circumferential groove located on a top portion thereof below a screw head, for receipt of said snap catches; and

screwing said bone screw into said bone segment through said screw hole of said clamping element until the snap catches interlock with the groove to secure said bone screw to said clamping element.

18. A method in accordance with claim 17, wherein:

said snap catches comprise spikes adapted to function as bone anchors.

19. A method in accordance with claim 18, wherein:

said spikes comprise elastic spring elements; and
said elastic spring elements snap into said groove when said bone screw is inserted into said clamping element.

20. A method in accordance with claim 17, wherein said bone screw is removable from said clamping element after said snap catches interlock with said groove.

21. A method in accordance with claim 20, wherein a greater axial force is needed to remove said screw from

said clamping element than is needed to insert said screw into said clamping element.

22. A method in accordance with claim 20, wherein:

removal of said screw from said clamping element results in deformation of at least one of (i) said snap catches, or (ii) said groove.

23. A method in accordance with claim 17, wherein:

said screw comprises a shaft having a conical portion between said groove and threads of said shaft.

24. A method in accordance with claim 17, wherein:

said groove has a flat edge portion perpendicular to a shaft of said screw; and

said snap catches have a square end portion for interlocking with said flat edge portion.

25. A method in accordance with claim 24, wherein:

removal of said screw from said clamping element results in deformation of at least one of (i) said square end portion of said snap catches, or (ii) said flat edge portion of said groove.

26. A method in accordance with claim 17, wherein:

a targeting instrument is placed on said clamping element; and

said screw is screwed through said clamping element and into said bone segment via said targeting instrument.

27. A method in accordance with claim 17, wherein:

said screw is a cannulated screw; and

said screw is positioned on the bone segment via a Kirschner wire.

28. A method in accordance with claim 17, wherein:

said screw is rotatable after interlocking with said clamping element in order to achieve further pre-stress between said bone segment and said clamping element.

29. A method in accordance with claim 17, wherein:

said screw is a cannulated screw having internal threads in a cannulated portion thereof.